

**CLAIMS**

1. Communication method to be used in a communication network comprising a buffering element, a line termination element and a plurality of network termination elements, said buffering element being coupled to said line termination element, and said line termination element being coupled to each of said network termination elements over a shared medium, **CHARACTERISED IN THAT** said communication method includes the step of interacting between said buffering element and said line termination element to adjust a cell input/output rate of said buffering element to at least one bandwidth related condition of each of said network termination elements, or vice versa.

2. Communication method according to claim 1, **CHARACTERISED IN THAT** said step of interacting consists of said line termination element notifying said buffering element to adjust said cell input/output rate of said buffering element to said at least one bandwidth related condition of said network termination elements.

3. Communication method according to claim 1, **CHARACTERISED IN THAT** said step of interacting consists of said buffering element notifying said line termination element to adjust said at least one bandwidth related condition of said network termination elements to said cell input/output rate of said buffering element.

4. Buffering element (BE) to be used in a communication network (CN), said communications network (CN) further comprising a line termination element (LT) and a plurality of network termination elements (NT<sub>1</sub>, NT<sub>2</sub>, NT<sub>n</sub>), said buffering element (BE) being coupled to said line termination element (LT), and said line termination element (LT) being coupled to each of said network termination elements (NT<sub>1</sub>, NT<sub>2</sub>, NT<sub>n</sub>) over a shared medium (OSM), said buffering element (BE) comprising the following parts:

a. a buffering part (BP), adapted to store cells sent to said buffering element (BE);

b. a measuring part (MP), coupled with an input to an output of said buffering part (BP) and adapted to determine a criterion based on a cell

5 input/output rate of said buffering part;

c. an interpreting part (IP), coupled with an input to an output of said measuring part (MP) and adapted to interpret said criterion based on said cell input/output rate of said buffering part (BP) and being adapted to derive therefrom an instruction for a policing part (PP) whether or not to discard or

10 mark said cells sent to said buffering element (BE),

d. a policing part (PP), coupled with an input to an output of said interpreting part (IP) and adapted to discard or mark said cells sent to said buffering element (BE), based on said instruction of said interpreting part (IP),

**CHARACTERISED IN THAT** said buffering element (BE) further comprises:

15 e. a reception part (RP), coupled with an output to an input of said interpreting part (IP) and adapted to receive a notification of said line termination (LT) containing an interpretation of at least one condition of each of said network termination elements ( $NT_1$ ,  $NT_2$ ,  $NT_n$ ), and that said interpreting part (IP) additionally is adapted to derive said instruction from said notification of

20 said line termination (LT) on said interpretation of said at least one condition of each of said network termination elements ( $NT_1$ ,  $NT_2$ ,  $NT_n$ ).

5. Buffering element (BE) according to claim 4, **CHARACTERISED IN THAT** said criterion is a characteristic of cells sent to said buffering element

25 (BE).

6. Buffering element (BE) according to claim 4, **CHARACTERISED IN THAT** said criterion is a filling level of said buffering part (BP).

30 7. Line termination element (LT) to be used in a communication network (CN), said communication network (CN) further comprising a buffering element (BE) and a plurality of network termination elements ( $NT_1$ ,  $NT_2$ ,  $NT_n$ ),

said buffering element (BE) being coupled to said line termination element (LT), and said line termination element (LT) being coupled to each of said network termination elements ( $NT_1$ ,  $NT_2$ ,  $NT_n$ ) over a shared medium (OSM), said line termination element (LT) comprising the following parts:

- 5           a. a detection part (CDP), adapted to detect at least one condition of each of said network termination elements ( $NT_1$ ,  $NT_2$ ,  $NT_n$ ); and
- b. a condition interpreting part (CIP), coupled with an input to an output of said detection part (CDP) and adapted to derive an interpretation of said at least one condition of each of said network termination elements ( $NT_1$ ,  
10    $NT_2$ ,  $NT_n$ ), **CHARACTERISED IN THAT** said line termination element (LT) further comprises:
  - c. a notification part (NP), coupled with an input to an output of said condition interpreting part (CIP) and adapted to notify said buffering element (BE) of said interpretation of said at least one condition of each of said network  
15   termination elements ( $NT_1$ ,  $NT_2$ ,  $NT_n$ ).

8. Line termination element (LT) according to claim 7,  
**CHARACTERISED IN THAT** said condition interpreting part (CIP) is adapted to derive a bandwidth allocation for each of said network termination elements  
20   ( $NT_1$ ,  $NT_2$ ,  $NT_n$ ) based on said at least one condition of each of said network termination elements ( $NT_1$ ,  $NT_2$ ,  $NT_n$ ).

9. Line termination element (LT) according to claim 7,  
**CHARACTERISED IN THAT** said condition interpreting part (CIP) is adapted to  
25   transparently pass said at least one condition of each of said network termination elements ( $NT_1$ ,  $NT_2$ ,  $NT_n$ ).

10. Buffering element (BE1) to be used in a communication network (CN), said communications network (CN) further comprising a line termination  
30   element (LT1) and a plurality of network termination elements ( $NT_1$ ,  $NT_2$ ,  $NT_n$ ), said line termination element (LT1) being adapted to allocate bandwidth to each of said network termination elements ( $NT_1$ ,  $NT_2$ ,  $NT_n$ ), said buffering element

(BE1) being coupled to said line termination element (LT1), and said line termination element (LT1) being coupled to each of said network termination elements (NT<sub>1</sub>, NT<sub>2</sub>, NT<sub>n</sub>) over a shared medium (OSM), said buffering element (BE1) comprising the following parts:

- 5           a. a buffering part (BP1), adapted to store cells sent to said buffering element (BE1);
  - b. a measuring part (MP1), coupled with an input to an output of said buffering part (BP1) and adapted to determine a criterion based on a cell input/output rate of said buffering part; and
  - 10          c. an interpreting part (IP1), coupled with an input to an output of said a measuring part (MP1) and adapted to generate an interpretation of said criterion based on said cell input/output rate of said buffering part,
- CHARACTERISED IN THAT** said buffering element (BE1) further comprises:
- d. a notification part (NP), coupled with an input to an output of said
  - 15       interpreting part (IP1) and adapted to notify said line termination (LT1) of said interpretation of said criterion based on said cell input/output rate of said buffering part.

11. Buffering element (BE1) according to claim 10,

20   **CHARACTERISED IN THAT** said criterion is a characteristic of cells sent to said buffering element (BE1).

12. Buffering element (BE1) according to claim 10,

**CHARACTERISED IN** that said criterion is a cell filling level of said buffering

25   part (BP1).

13. Line termination element (LT1) to be used in a communication network (CN), said communication network (CN) further comprising a buffering element (BE1) and a plurality of network termination elements (NT<sub>1</sub>, NT<sub>2</sub>, NT<sub>n</sub>),

30   said line termination element (LT1) being adapted to allocate bandwidth to each of said network termination elements (NT<sub>1</sub>, NT<sub>2</sub>, NT<sub>n</sub>), said buffering element (BE1) being coupled to said line termination element (LT1), and said line

termination element (LT1) being coupled to each of said network termination elements (NT<sub>1</sub>, NT<sub>2</sub>, NT<sub>n</sub>) over a shared medium (OSM), said line termination element (LT1) comprising the following parts:

- a. a medium access control part (MACP1), adapted to allocate  
5 bandwidth to each of said network termination elements (NT<sub>1</sub>, NT<sub>2</sub>, NT<sub>n</sub>) based on at least one condition of each of said each network termination element (NT<sub>1</sub>, NT<sub>2</sub>, NT<sub>n</sub>);
- b. a detection part (CDP1), coupled with an output to an input of said a medium access control part (MACP1) and adapted to detect said at least one  
10 conditions of each of said network termination elements (NT<sub>1</sub>, NT<sub>2</sub>, NT<sub>n</sub>); and
- c. a granting part (GP1), coupled with an input to an output of said a medium access control part (MACP1) and adapted to send grants to each of said network terminations (NT<sub>1</sub>, NT<sub>2</sub>, NT<sub>n</sub>), indicating that a certain amount of bandwidth is allocated to each of said network terminations (NT<sub>1</sub>, NT<sub>2</sub>, NT<sub>n</sub>),  
15 **CHARACTERISED IN THAT** said line termination element (LT1) further comprises:
  - d. a reception part (RP), coupled with an output to an input of said a medium access control part (MACP1) and adapted to receive a notification of an interpretation of a criterion based on a cell input/output rate of said buffering  
20 part, and that said medium access control part (MACP1), additionally is adapted to allocate said bandwidth to each of said each network termination elements (NT<sub>1</sub>, NT<sub>2</sub>, NT<sub>n</sub>) based on said notification of said buffering element (BE1).

14. Line termination element (LT1) according to claim 13,  
25 **CHARACTERISED IN THAT** said criterion is a characteristic of cells sent to said buffering element (BE1).

15. Line termination element (LT1) according to claim 13,  
**CHARACTERISED IN THAT** said criterion is a filling level of a buffering part  
30 (BP1) of said buffering element (BE1).